



weather.gov/houston

The Official Texas

# HURRICANE

Guide



Houston/Galveston Edition

Available at  
**Walmart**   
Save money. Live better.

**MAKE YOUR PLAN.  
BE READY!**



Mike

Dr. Jim

Lindsey

J.D.



**YOUR GULF COAST WEATHER AUTHORITY**  
[myfoxhouston.com](http://myfoxhouston.com)

[info@coastalguardiansoutreach.org](mailto:info@coastalguardiansoutreach.org) | © copyright 2015 coastal guardians outreach

## TEXAS DEPARTMENT OF PUBLIC SAFETY

5805 N LAMAR BLVD • BOX 4087 • AUSTIN, TEXAS 78773-0001  
512/424-2000

[www.dps.texas.gov](http://www.dps.texas.gov)



STEVEN C. McDRAW  
DIRECTOR  
DAVID G. BAKER  
ROBERT J. BODISCH, SR.  
DEPUTY DIRECTORS



COMMISSION  
A. CYNTHIA LEON, CHAIR  
MANNY FLORES  
FAITH JOHNSON  
STEVEN P. MACH  
RANDY WATSON

Dear Colleagues:

Hurricanes are deadly and destructive threats to communities along the Texas coastline. Along with high winds, tropical systems can produce immense storm surge, violent tornados, and dangerous flooding.

In order to help citizens prepare, the National Weather Service has once again collaborated with local nonprofit organizations and the Texas Department of Public Safety's Division of Emergency Management to bring you the Official Texas Hurricane Guide. It is especially crucial for coastal residents to plan and prepare for each type of hurricane hazard to prevent and reduce the loss of life and property and improve community resilience.

This guide is an up-to-date, easy-to-use resource that will help you and your family better understand what to do before, during and after a storm. It will also assist your family with the preparation of a family emergency plan, checklists and a disaster supply kit. Families should review emergency plans and checklists on a regular basis. You can increase situational awareness by monitoring statements issued by the National Hurricane Center, watches and warnings issued by National Weather Service offices in Texas and broadcasts from NOAA weather radio and local media.

The emergency management community and its partners are committed to keeping Texans safe when tropical systems threaten our coastal areas. You can be a proactive and resilient household within your community by reading this guide and preparing your family in advance. For additional information about building and strengthening community resilience, you can visit Weather-Ready Nation at [www.nws.noaa.gov/com/weatherreadynation](http://www.nws.noaa.gov/com/weatherreadynation).

I thank you for your continued dedication to year-round personal preparedness and for your preparations this hurricane season.

Be informed. Be prepared. Be involved.

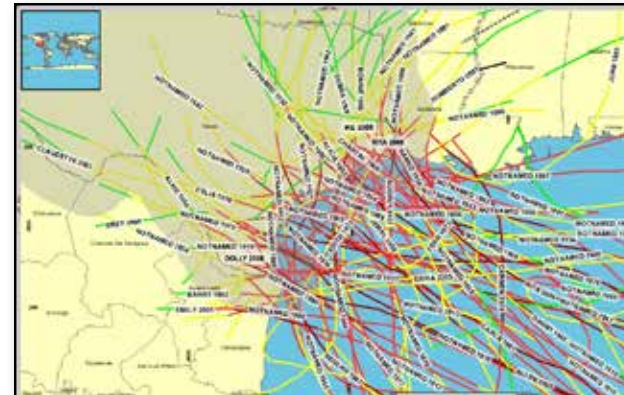
Respectfully,

W. Nim Kidd, CEM®, TEM®  
Chief  
Texas Division of Emergency Management  
Assistant Director  
Texas Homeland Security  
Texas Department of Public Safety  
[@chiefkidd](https://twitter.com/chiefkidd) on Twitter

EQUAL OPPORTUNITY EMPLOYER  
COURTESY • SERVICE • PROTECTION



Above: High resolution satellite image of Hurricane Ike over the northwest Gulf of Mexico. Image--NASA



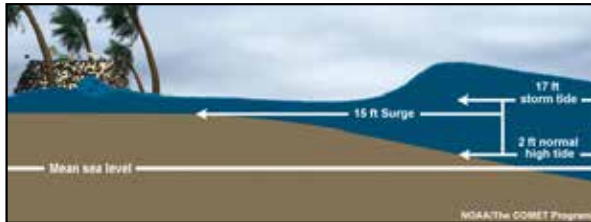
Above: Historical perspective of hurricane landfalls in Texas since 1851.

**Since 1851, 63 hurricanes have struck the Texas coast.  
That is one every three years on average.**

Hurricanes form over warm ocean waters, like those found in the Gulf of Mexico. The hurricane season starts June 1 and ends November 30. The peak threat for the Texas coast exists from August through September. However, hurricanes can and have struck the Texas coast during every month of the hurricane season.

## Storm Surge Defined

Storm surge is an abnormal rise of water generated by a storm, over and above the predicted astronomical tides. This rise in water level can cause extreme flooding in coastal areas resulting in storm tides reaching up to 20 feet or more in some cases. Along the Texas coast, these flood waters can penetrate far inland depending on the elevation of the land. If the storm tide is greater than the land elevation (even if well inland) then storm surge flooding will be possible.



## Storm Surge Can Be Deadly! Here are 6 Tips to Be Ready

1. Storm surge flooding is often the greatest threat to life and property from a hurricane. It poses a significant threat for drowning. A mere six inches of fast-moving flood water can knock over an adult. It takes only two feet of rushing water to carry away most vehicles.
2. Storm surge can cause water levels to rise quickly and flood large areas in just minutes, and you could be left with no time to take action if you haven't already evacuated as instructed.
3. Storm surge is not dependent on the Saffir-Simpson Hurricane Wind Scale. Hurricane categories are based only on winds and do not account for storm surge. Any wind category can all cause life-threatening storm surge.
4. Many Gulf Coast areas are vulnerable to storm surge including areas many miles inland from the coastline depending on elevation of the coastal plain. Find out today if you live in an evacuation zone (see pages 6-7 in this guide).
5. Storm surge can occur before, during and after the center of the storm passes through an area, and can sometimes cutoff evacuation routes. The water can also rise well in advance of the coming storm, in some cases 36 hours or greater. When an evacuation is ordered, do not wait until the last minute to leave.
6. During the peak of a storm surge event, it is unlikely that emergency responders will be able to reach you if you are in danger.



For more information about storm surge, please visit the new NHC Storm Surge Video: <https://www.youtube.com/watch?v=bBa9bVYKLP0>

## Potential Flooding

NOAA's National Hurricane Center (NHC) will issue an experimental Potential Storm Surge Flooding Map, developed over the course of several years in consultation with emergency managers, broadcast meteorologists, social scientists, and others.

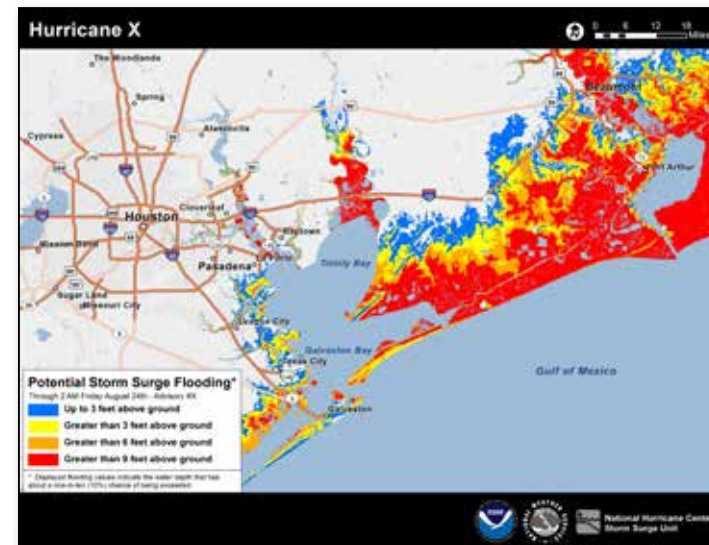
### The map will show:

- Geographical areas where inundation from storm surge could occur.
- How high above ground the water could reach in those areas.

### Other things to know about this map:

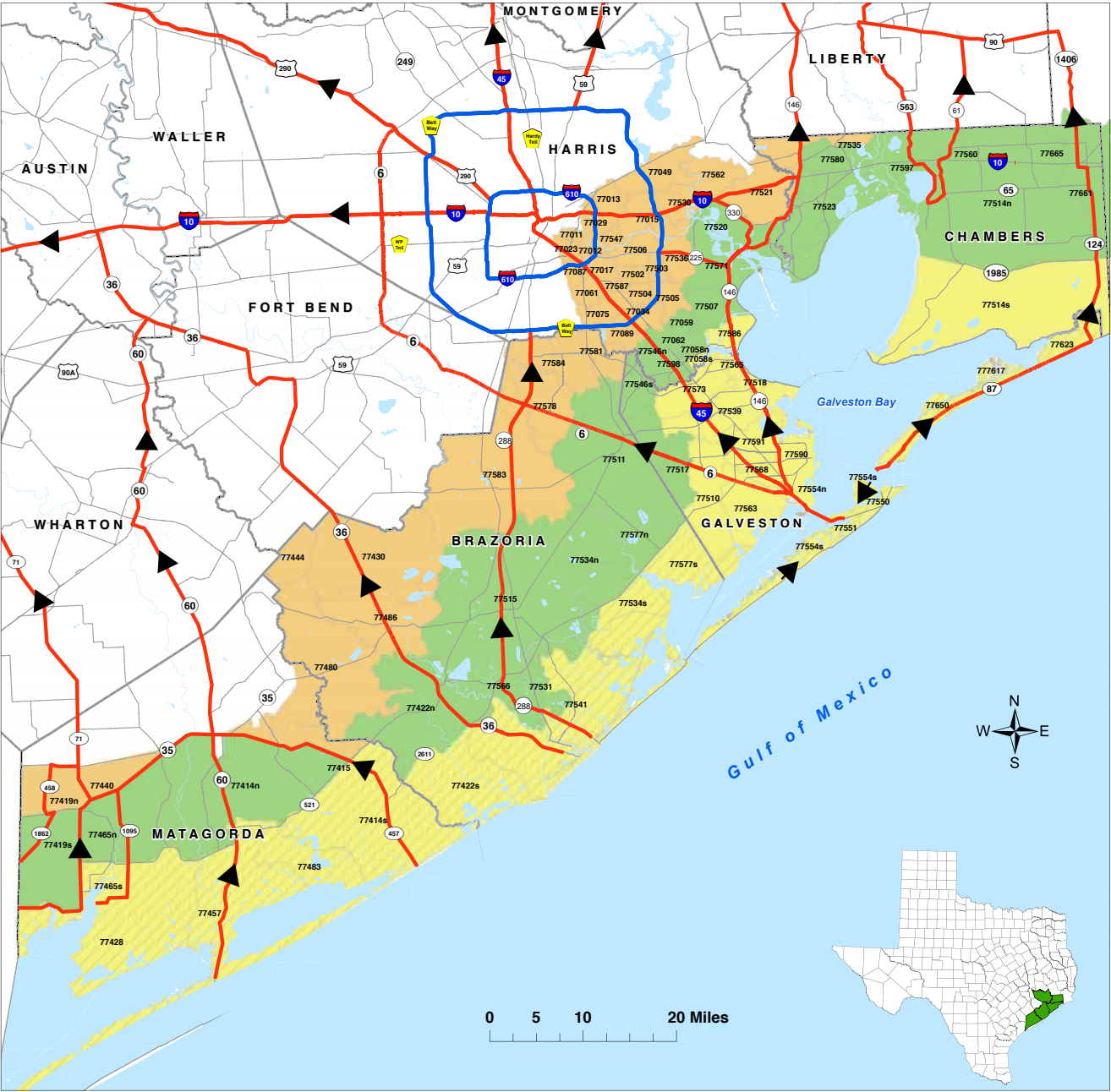
- The first map will usually be issued at the same time as the initial tropical storm or hurricane watch.
- The map is based on the forecast track and intensity for the tropical cyclone, and takes into account forecast errors.
- The map shows inundation levels that have a 10 percent chance of being exceeded, and can be considered a reasonable worst-case scenario for any given location.
- The map is subject to change every six hours, with every new NHC full advisory package.

The map will be part of an interactive display on the NHC website ([hurricanes.gov](http://hurricanes.gov)) when tropical storm or hurricane watches and warnings are in effect.



*\*\*Test storm\*\* example shown for Houston/Galveston, Texas*





**Brazoria, Chambers, Galveston, Harris and Matagorda Hurricane Evacuation Zip-Zones Coastal, A, B, C**

ZIP ZONE COASTAL				
77414s	77415	77422s	77428	77457
77465	77483	77534s	77541	77550
77551	77554s	77563	77577s	77617
77623	77650			
ZIP ZONE A				
77058s	77510	77514s	77518	77539
77554n	77563	77565	77568	77573
77586	77590	77591		
ZIP ZONE B				
77058n	77059	77062	77414n	77415
77419s	77422n	77456	77465n	77507
77511	77514n	77515	77517	77520
77523	77531	77534n	77541	77546n
77546s	77560	77566	77571	77577n
77580	77597	77598	77661	77665
ZIP ZONE C				
77011	77012	77013	77015	77017
77023	77029	77034	77049	77061
77075	77087	77089	77419n	77430
77440	77444	77480	77486	77502
77503	77504	77505	77506	77521
77530	77535	77536	77547	77562
77578	77581	77583	77584	77587

**Route Designation**

- Evacuation Corridors
- Evacuation Connections
- Other Roads
- County Boundary



**HGAAC**  
Houston-Galveston Area Council  
Map Created by:  
Houston-Galveston Area Council

# Inland Flooding

There are numerous examples of significant flooding caused by land-falling tropical cyclones in Texas. Storms with a slow forward motion are the most dangerous as heavy rains persist for a longer period of time.

## Five Practical Ways to Protect Yourself and Others From the Dangers of Inland Flooding

### Protect Your Personal Documents and Special Items

- Store valuables in plastic tubs with locking tops
- In case of evacuation, you should be able to secure and move all your valuables within 15 minutes

### Buy Flood Insurance: A Plan for Replaceable Items

- The National Flood Insurance Program (NFIP) is available from an insurance agent or the NFIP
- For more information see [www.floodsmart.gov](http://www.floodsmart.gov)

### Flood Proof Your Home - Take Steps to Minimize Flood Damage

- Shut off the main circuit breaker to prevent short circuiting and eliminate the threat of electrocution
- Raise outside air conditioning units onto platforms above ground level
- Store rarely used or expensive items in the attic or on high shelves

### Develop a Family Flood Plan

- Develop a plan of action to keep from panicking during an emergency
- Have an evacuation route and alternatives planned in the event you are asked to evacuate
- Communicate your plans with friends or family outside of your home area
- Battery powered radios or televisions can be used in the event of a power outage

### Never Drive on Flooded Roads

- Driving into flooded roadways puts your life and the lives of others at risk
- Unless told to evacuate, you are probably safest staying at your current location
- If you encounter flood waters when driving, Turn Around, Don't Drown!



# Tornadoes and Destructive Winds

Tropical cyclones also produce tornadoes. These tornadoes most often occur in thunderstorms embedded in rain bands well away from the center of the hurricane; however, they can also occur near the eyewall. Tornadoes produced by tropical cyclones are relatively weak and short-lived, but still pose a threat.

Hurricane force winds of 74 mph or more can destroy buildings, mobile homes, trees and power poles. Debris such as signs, roofing material, siding, and small items left outside become flying missiles in a hurricane. The strongest winds occur in a region of the hurricane called the eyewall. Wind gusts in the right side of the eyewall are the most destructive. Hurricane force winds can be felt as far as 150 miles from the coast.



Above: Wind damage to a billboard from Hurricane Lili in October 2002.



## MOBILE HOME RESIDENTS MUST EVACUATE!

- No mobile home or manufactured home - no matter how new it is - can provide safe shelter from hurricane force winds.
- Straps or other tie-downs will not protect a mobile home from the high winds associated with a hurricane.
- Mobile home residents must evacuate when told to do so by local authorities.

## Saffir Simpson Hurricane Wind Scale

- Category 1 - Winds 74 to 95 mph
- Category 2 - Winds 96 to 110 mph
- Category 3 - Winds 111 to 129 mph
- Category 4 - Winds 130 to 156 mph
- Category 5 - Winds 157 mph or higher

## Home Preparation

### Elevation Matters

- Know the elevation of your home! Are you in a flood and/or evacuation zone?

### Mobile Homes

- Check tie-downs for rust or breakage.
- Residents of mobile homes must evacuate when told to do so!!

### Landscaping

- Trim trees, shrubbery and dead limbs, especially ones close to your home.
- Repair or replace broken or damaged fences.

### Roofing

- Inspect the roof for loose tiles, shingles or debris. Consider replacing old or damaged shingles with new ones rated for hurricane force winds.
- Clear loose and clogged rain gutters and downspouts.

### Doors

- Reinforce garage doors and tracks or replace with a hurricane tested door.
- Reinforce double entry doors with heavy duty foot and head bolts.
- Use a security dead bolt with a one inch minimum bolt length.

### Windows

- If possible, install tested/manufactured hurricane shutters.
- Inspect existing shutters to ensure they are in good working order.
- Alternative: Use 5/8" or greater exterior grade plywood secured by 2 1/2" screws and/or special clips. Obtain wood and fasteners, cut wood to size, pre-drill holes and place anchors on homes.



## Business and Employee Preparation

- Identify and protect vital records. Backup and store key files off site.
- Protect electronic equipment from possible water damage.
- Have extra cash and blank checks in case extra money is needed after the storm.
- Develop a 24-hour emergency contact with phone numbers of key employees.
- Set up telephone numbers for employees to check in and receive company information.
- Establish a temporary location for business operations in case your facility is damaged.
- Give employees enough time to secure their homes and families.
- Consider paying employees before they leave to prepare their homes.

## Marine Preparations

- Check with the manufacturer for proper ways to secure your boat during a storm.
- Purchase necessary hurricane materials such as additional mooring lines, crew anchors, fenders, fender boards, chafing gear, and anchors.
- Safe storm moorings should consist of good condition ropes of sufficient diameter and length, with at least three or four substantial anchor points.
- Do not moor parallel to bank. Receding tides often capsize boats in this type of anchorage.

## Preparing for Your Pet's Safety

Your pet should be part of your overall hurricane preparation plans. Below are a few important things to help you prepare:

- Make sure your pet's vaccinations are current and have proof they are current. DO NOT assume that a public shelter or hotel will accept your pet.
- Be sure to have a current photo of your pet.
- Each animal should have a properly sized pet carrier. The carrier should be large enough for the animal to stand up and turn around.
- Pack enough food and bottled water for the duration of your evacuation. DO NOT let your pet eat food or drink water from outside that may have become contaminated.
- Be sure to pack all medications your pet may need along with a muzzle, collar, leash, paper towels, and trash bags.
- Make sure your pet has a proper ID collar.

## STATE OF TEXAS EMERGENCY ASSISTANCE REGISTRY

# STEAR

Do you or anyone you know need some form of assistance during times of an emergency/disaster event? The state of Texas offers Texans the option to register with the STEAR program, a FREE registry that provides local emergency planners and responders with additional information on the needs in their community.

(Texas communities use the registry information in different ways. Registering yourself in the STEAR registry DOES NOT guarantee that you will receive a specific service during an emergency. Available services will vary by community. For more information on how your community will use information in the STEAR registry, contact your local emergency management office.)

### Who Should Register?

- People with Disabilities
- People with access and functional needs such as:
  - People who have limited mobility
  - People who have communication barriers
  - People who require additional medical assistance during an emergency event
  - People who require transportation assistance
  - People who require personal care assistance

### How to Register

- <https://STEAR.dps.texas.gov>
- Dial 2-1-1 or use your video phone relay option of choice to contact 211
- Printed or electronic forms (Contact your local government)

### Required Information to Register

- Name
- Address
- Phone Number
- Primary Language

Registration is **VOLUNTARY**.

### Additional questions asked to capture vital information for local emergency planners and responders

- Emergency Contact Information
- Caregiver Information
- Pets
- Transportation assistance for home evacuation
- Communication Barriers
- Disability, Functional or Medical Needs

All of the information you provide will be kept

**COMPLETELY CONFIDENTIAL.**



# Insurance Tips

## Before the Storm

- New and existing policies will not be written or modified when a storm nears the Gulf of Mexico.
- Make sure you fully understand what perils are covered and excluded in your policy.
- Make sure your coverage is adequate to replace your home and contents in today's dollar.
- Determine whether your policy covers additional living expenses for a temporary residence if you are unable to live in your home because of damage from a disaster.
- Before hurricane season, prepare detailed written and/or photographic inventory of your home's contents and store it in a safe place with your policy.
- If your insurance company does not cover flood or windstorm perils, ask about coverage through the Texas Windstorm Insurance Association or the National Flood Insurance Program.

## After the Storm

- Give prompt written notice to your insurance company.
- Photograph or videotape damaged structures and all damaged property. Make a list of damaged or lost items.
- DO NOT throw out damaged property before your adjuster has inspected the debris unless it is a health hazard or impedes local cleanup.
- Protect your property from further damage.
- Keep an accurate record of temporary repair and living expenses if a loss of use is suffered.

## Important Online Insurance Information

- National Flood Insurance Program  
[www.floodsmart.gov](http://www.floodsmart.gov)
- Texas Windstorm Insurance Association  
[www.twia.org](http://www.twia.org) Consumer help line  
800-788-8247
- Texas Department of Insurance  
[www.tdi.texas.gov](http://www.tdi.texas.gov)  
Consumer help line 800-252-3439



Your local Texas Chapter of the American Red Cross recommends that you have the following items in your Hurricane Supply Kit. Do not forget to have a family meeting before hurricane season and review your communication information and evacuation plan. Make sure the contact information such as home, work, school, cell phone numbers, and your "Out of Town" contact person's information is current.



**American  
Red Cross**

## Emergency Contact Information

Out of Town Contact Address: \_\_\_\_\_

Out of Town Contact Phone Number: \_\_\_\_\_

Work Telephone Number: \_\_\_\_\_

Cell Number/Spouse Cell Number: \_\_\_\_\_

Children Cell Number: \_\_\_\_\_

School Telephone Number: \_\_\_\_\_

Doctor Telephone Number: \_\_\_\_\_

Bank/Credit Card Telephone Number: \_\_\_\_\_

Insurance Company Information: \_\_\_\_\_

**Whatever comes your way,  
you'll know what to do.**

**Red Cross mobile apps  
put help in your hand.**



**24 hour number to  
call for assistance  
1-800-RED CROSS  
(1-800-733-2767)**

Download our preparedness apps today. Call \*RED CROSS from your mobile phone and we'll send you a link to download the apps, or search the iTunes app store or Google Play for American Red Cross.

**Your chapter of the American Red Cross recommends that you have the following items in your Hurricane Supply Kit.**

- At least a 7-day supply of non-perishable food and water. One gallon of water per person per day is recommended
- Battery powered portable television or radio with extra batteries
- Flashlight with extra batteries
- First Aid kit and manual
- Sanitation and hygiene items such as instant hand sanitizing gel, moist towelettes, toilet paper, and feminine hygiene products
- Whistle
- Kitchen accessories, cooking utensils, and manual can opener
- Cash
- Extra clothing, blankets, and sleeping bags
- Matches in a waterproof container
- Photocopies of identification, insurance, prescriptions, household inventory, credit cards, and your latest utility bill
- CD or photocopies of important documents such as birth/marriage certificates and titles
- Prescription medications, eyeglasses, contact lens solution, and hearing aid batteries
- Formula, baby food, diapers, and pacifiers
- Pet carriers, leashes, shot records, and food for each animal evacuating with you
- A good map showing county roads and highways
- Tire repair kit, booster cables, pump, and flares
- White distress flag
- Toys and games for children
- List of family phone numbers and addresses outside the area



## Hurricane Names

### 2015

- |                                    |                                   |
|------------------------------------|-----------------------------------|
| <input type="checkbox"/> Ana       | <input type="checkbox"/> Larry    |
| <input type="checkbox"/> Bill      | <input type="checkbox"/> Mindy    |
| <input type="checkbox"/> Claudette | <input type="checkbox"/> Nicholas |
| <input type="checkbox"/> Danny     | <input type="checkbox"/> Odette   |
| <input type="checkbox"/> Erika     | <input type="checkbox"/> Peter    |
| <input type="checkbox"/> Fred      | <input type="checkbox"/> Rose     |
| <input type="checkbox"/> Grace     | <input type="checkbox"/> Sam      |
| <input type="checkbox"/> Henri     | <input type="checkbox"/> Teresa   |
| <input type="checkbox"/> Ida       | <input type="checkbox"/> Victor   |
| <input type="checkbox"/> Joaquin   | <input type="checkbox"/> Wanda    |
| <input type="checkbox"/> Kate      |                                   |

### 2016

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> Alex     | <input type="checkbox"/> Lisa     |
| <input type="checkbox"/> Bonnie   | <input type="checkbox"/> Matthew  |
| <input type="checkbox"/> Colin    | <input type="checkbox"/> Nicole   |
| <input type="checkbox"/> Danielle | <input type="checkbox"/> Otto     |
| <input type="checkbox"/> Earl     | <input type="checkbox"/> Paula    |
| <input type="checkbox"/> Fiona    | <input type="checkbox"/> Richard  |
| <input type="checkbox"/> Gaston   | <input type="checkbox"/> Shary    |
| <input type="checkbox"/> Hermine  | <input type="checkbox"/> Tobias   |
| <input type="checkbox"/> Ian      | <input type="checkbox"/> Virginie |
| <input type="checkbox"/> Julia    | <input type="checkbox"/> Walter   |
| <input type="checkbox"/> Karl     |                                   |

### 2017

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> Arlene   | <input type="checkbox"/> Lee      |
| <input type="checkbox"/> Bret     | <input type="checkbox"/> Maria    |
| <input type="checkbox"/> Cindy    | <input type="checkbox"/> Nate     |
| <input type="checkbox"/> Don      | <input type="checkbox"/> Ophelia  |
| <input type="checkbox"/> Emily    | <input type="checkbox"/> Philippe |
| <input type="checkbox"/> Franklin | <input type="checkbox"/> Rina     |
| <input type="checkbox"/> Gert     | <input type="checkbox"/> Sean     |
| <input type="checkbox"/> Harvey   | <input type="checkbox"/> Tammy    |
| <input type="checkbox"/> Irma     | <input type="checkbox"/> Vince    |
| <input type="checkbox"/> Jose     | <input type="checkbox"/> Whitney  |
| <input type="checkbox"/> Katia    |                                   |



This chart is marked with vertical(longitude) and horizontal(latitude) lines, each representing 1 degree. A storm's position is given in these degrees. Find the given longitudinal number at the bottom of the chart. Follow it up where it intersects with the given latitudinal line. Place a mark on the intersection point (this is the hurricane's current position).

Stay Connected:



## Latest Weather Information

- National Weather Service  
weather.gov/houston  
24 Hour Phone Recording:  
281-337-5074
- National Hurricane Center  
www.hurricanes.gov



@NWSHouston

The National Hurricane Center (NHC) in Miami, FL is the official source for tropical cyclone advisories and forecasts and is responsible for issuing tropical cyclone watches and warnings for the United States.

## Graphical Tropical Weather Outlook

- NHC product provides an overview of all tropical cyclone activity, indicates areas of interest that have potential for tropical cyclone development.

## NHC Forecast Advisory

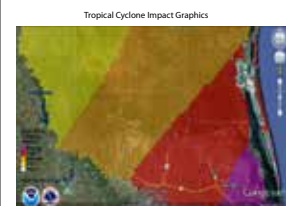
- Most recent position for a storm along with all coastline watches and warnings. Includes a 3 or 5 day track with error cone.
- Error cone represents a 5 year average error. Storms only stay within the error cone 67% of the time.
- DO NOT focus too closely on the exact track forecast - the little black line.

## Potential Storm Surge Flooding.

- If a tropical storm or hurricane is threatening your community, go to [www.hurricanes.gov](http://www.hurricanes.gov) to see a map like this, which will show potential storm surge flooding for your area.
- New Storm Surge Watch/Warning graphic will highlight threatened areas.

## Hurricane Threats and Impacts

- Issued by local NWS offices to summarize potential impacts expected from the tropical cyclone.
- Click on each colored area to pop up text that describes potential impact.
- [weather.gov/tcig](http://weather.gov/tcig)



## Actions to Take When a Storm is in the Gulf

- Listen frequently to radio, TV, or NOAA weather radio for bulletins and forecasts of the storm's progress.
- Double check items in your emergency supply kit.
- Fuel and service your vehicles.
- Inspect and secure mobile home tie-downs.
- Board up windows (if shutters do not exist) in case storm moves quickly and you have to leave!  
**TAPE PROVIDES NO PROTECTION!**
- Store lawn furniture and other loose, light weight objects, such as garbage cans and garden tools.
- Garage or store vehicles that are not being used.
- Follow instructions issued by local officials.  
**EVACUATE IMMEDIATELY IF ORDERED TO DO SO!**

## Final Actions to Take if Leaving

- Turn off propane tanks.
- Unplug small appliances.
- Empty refrigerator and freezer.
- Turn off utilities if ordered to do so.
- Lock home securely.
- Take pets with you.



## Final Actions to Take if Staying

- Close storm shutters.
- Notify family members of your evacuation plans.
- Lower water level in swimming pool by one foot.
- Turn refrigerator or freezer to coldest setting and open only if necessary.  
(25 pounds of dry ice will keep a 10-cubic foot freezer below freezing for 3-4 days.)
- Follow instructions from emergency managers and be prepared to turn off utilities if ordered to do so.
- Board up remaining doors, brace garage door, and remain inside.  
Stay away from boarded up windows.
- Take refuge in a predetermined safe room, such as an interior closet, bathroom, or hallway.
- **DO NOT EXPECT EMERGENCY RESPONDERS TO BE OF ANY ASSISTANCE DURING A LANDFALLING HURRICANE!**



## A Look Back at Hurricane Rita 10 Years Later

The date was Wednesday September 21st 2005. Just 3 weeks earlier the nation watched in horror as Hurricane Katrina devastated the Gulf Coast, from Louisiana to the Florida Panhandle, with high winds and catastrophic storm surge flooding. Katrina was responsible for the third largest loss of life from any U.S. hurricane with an estimated 1200 fatalities. Katrina also forced a large number to leave the impacted areas with an estimated 400,000 evacuees sheltering in Texas. Now Hurricane Rita, with its category 5 rating and estimated 175 mph sustained winds, was forecast to track toward the southeast coast of Texas including the Houston/Galveston region. At 4 pm on Wednesday September 21st nearly the entire Texas coast was placed under a hurricane watch (figure 1) with the onset of tropical storm force winds possible as early as Friday.

On September 20th an evacuation was ordered for 3 million residents in the greater Houston area. It's likely many more outside the evacuation areas left voluntarily given the fear of the storm brought about by the recent example of Katrina and the rapid intensification of Rita to category 5

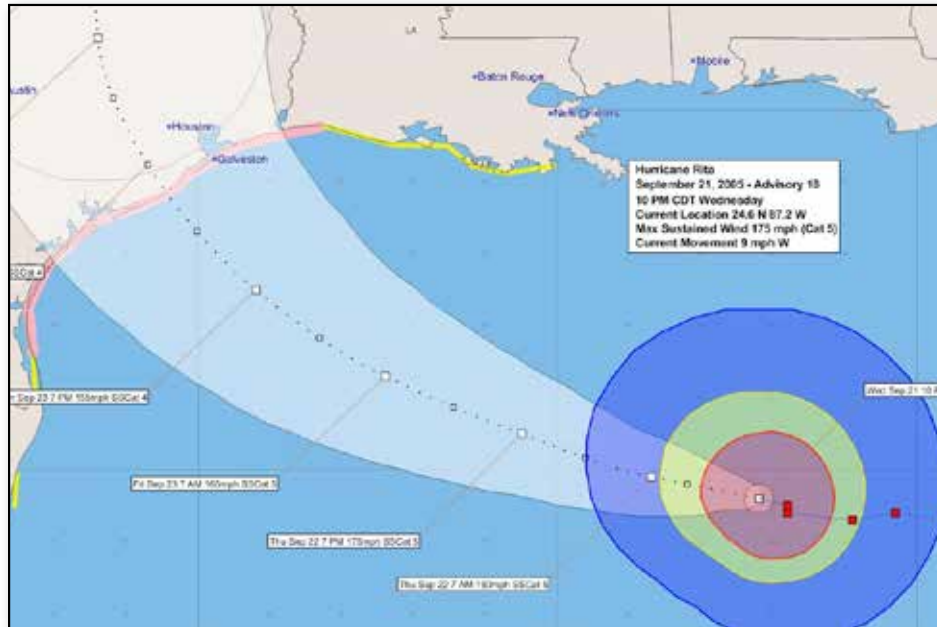


Figure 1. Category 5 Hurricane Rita forecast track at 10 pm CDT Sept. 21, 2005. Pink line shows area under Hurricane Watch at this time. Approximate area of Hurricane and Tropical Storm force winds indicated by red and blue shaded areas.

status that occurred on the 21st. The additional number of evacuees from Katrina in Texas added to the complexity. The result of the mass evacuation was gridlock on evacuation routes headed toward Dallas and San Antonio. Car trips that normally would take 3.5 hours took 24 hours. Interstate 45 north of Houston was backed up for 30 miles with similar congestion on Interstate 10 and 290. Many vehicles and gas stations ran out of fuel. The extreme heat, lack of access to food, water and rest rooms caused discomfort and health problems for some. Those on evacuation routes were prohibited from exiting those routes. The traffic congestion made it difficult for medical personnel to reach those in distress.

Since Rita, state and local officials have made many changes to the way evacuations are handled. The Houston/Galveston region now evacuates by zip code instead of evacuation zones which is easier to understand for most residents.

Those most vulnerable ordered to evacuate first. Evacuees are allowed more flexibility on the routes they take and will be allowed to exit the main routes. There is also a dedicated fuel team to keep gas stations along evacuation routes supplied with fuel. There is a written contraflow plan to be used as a last resort to expedite traffic flow away from Houston. There are several programs put in place or expanded to assist with evacuations of those that need extra assistance. This includes the 211 registry, now called the State of Texas Emergency Assistance Registry (STEAR) and the "Together Against the Weather" campaign which encourages partnering those that need assistance with "hurricane helpers" who can assist with their needs in the event an evacuation is necessary. There is also an education campaign encouraging people who are not in vulnerable areas to not evacuate to allow those in surge zones to leave first. The changes put in place after Rita are believed to have contributed to a much smoother more efficient evacuation ahead of Hurricane Ike in 2008.



Figure 2. Hurricane Rita at 1:45 PM CDT Sept. 22, 2005 (NOAA).

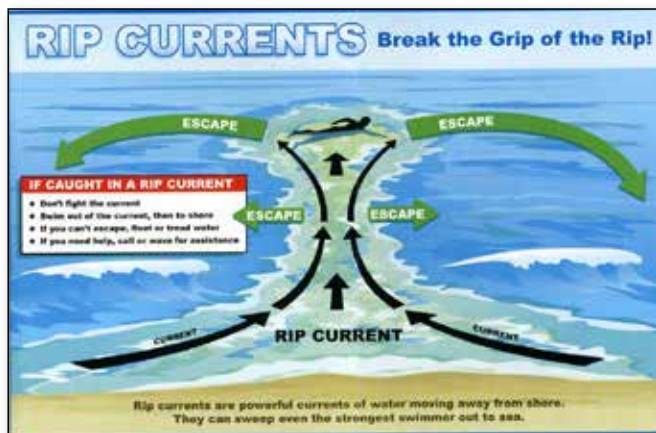
## Hurricane Surf



Along with big surf come strong rip currents. Rip currents are the leading surf hazard for all beach goers and result in over 100 drownings every year in the United States. The strength and size of rip currents are related to the size of the surf and wave period. Rip currents typically form at the low spots in the surf, at the breaks in the sandbars, and near jetties and piers.

## Rip Currents

If caught in a rip current, don't panic, but swim parallel to the shore. The current is usually only about 50 feet wide and you should be able to swim out of it. At that point, you can swim back to shore. If you are still unable to reach the shore, draw attention to yourself: face the shore, wave your arms, and yell for help.



- Assure that all contact information and emergency contact information is accurate with your campus' registrar's office.
- If your campus offers an emergency management communication system, register as a user of the system.
- Plan your method of evacuation and your destination before a storm enters the gulf.
- Monitor local radio and TV stations for updates.
- Contact your campus Student Affairs Office if you need assistance with evacuation.
- If you require any assistance due to a disability-related accommodation, please contact your campus Disability Services Office to make necessary arrangements.
- Communicate with your family regarding status and location
- If your campus is evacuating, you will not be allowed to remain on-campus and it is highly recommended that you leave the city. Do not go to a coastal location.
- Take your driver's license, student I.D. card, and a copy of your housing lease as well as medical insurance cards and other important documents when you evacuate.
- If you bank with a local bank or credit union whose infrastructure may be damaged by the storm, withdraw some funds as you may not have access to them once you leave the area.
- International students must take passports with US student visa inside, I-20, I-94, student I.D. and class schedule.
- If using personal transportation, take as many of your valuable or irreplaceable items as you are able.
- If driving, make sure all roads that you are driving are open and safe. You can call the Department of Transportation at 1-800-452-9292 or check on-line for conditions at [www.txdot.gov](http://www.txdot.gov)
- Follow baggage limits if participating in an assisted evacuation program.
- Take a 30-day supply of medications in original pharmacy containers.
- Make a record of any valuables left behind (description, serial numbers, etc). Take pictures of all belongings.
- If you are evacuating to a shelter, make appropriate arrangements for pets. Most shelters do not accept pets.
- Do not plan to return to campus until an all-clear is given (monitor media and campus web-site).



## Evacuation Routes

## Final Actions before Evacuating

- 

- TXDOT Highway Conditions  
1-800-452-9292 or  
[www.drivetexas.org](http://www.drivetexas.org)
- TXDOT Houston Office  
1-713-802-5000
- Twitter: @TxDOTAlert

## This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins or other markings on the paper.

## AUSTIN

- County Emergency Management  
979-865-5911

- Danbury  
979-922-1551
- Hillcrest Village  
281-748-7149
- Liverpool  
281-581-2342
- Manvel  
281-489-1212  
281-489-0630
- Oyster Creek  
979-233-8481
- Quintana  
979-233-0848
- Surfside  
979-239-1151

## BRAZORIA

- County Emergency Management  
[www.readybrazoria.us](http://www.readybrazoria.us)  
979-864-1201
- City of Alvin  
281-388-4363
- City of Angleton  
979-849-2383
- City of Brazoria  
979-798-2489
- City of Clute  
979-265-6194
- City of Freeport  
979-239-1211
- City of Lake Jackson  
979-415-2500
- City of Pearland  
281-997-4650  
[www.cityofpearland.com](http://www.cityofpearland.com)
- City of Richwood  
979-265-8157
- City of Sweeny  
979-548-3321
- City of West Columbia  
979-345-5121
- Brookside Village  
281-997-9777
- Bailey's Prairie  
979-849-0134

## BRAZOS

- County Emergency Management  
979-821-1011  
[www.bcdem.org](http://www.bcdem.org)
- City of Bryan  
979-821-1030  
[www.bryantx.gov/departments/?name=emergency\\_preparedness\\_main](http://www.bryantx.gov/departments/?name=emergency_preparedness_main)
- City of College Station  
979-764-6210  
[www.cstx.gov/dem](http://www.cstx.gov/dem)

## BURLESON

- County Emergency Management  
979-567-2008

## CHAMBERS

- County Emergency Management  
409-267-2445  
[www.co.chambers.tx.us/](http://www.co.chambers.tx.us/)

## COLORADO

- County Emergency Management  
979-733-0184

## FORT BEND

- County Emergency Management  
281-342-6185  
[www.fbcem.org/](http://www.fbcem.org/)
- Arcola  
281-431-0606
- Beasley  
979-387-2775
- City of Fairchilds  
979-793-6676
- City of Fulshear  
281-346-1796
- City of Kendleton  
832-439-1524
- City of Missouri City  
281-403-8500  
[www.missouricityready.com](http://www.missouricityready.com)
- City of Meadows Place  
281-983-2900
- City of Needville  
979-793-4255
- City of Orchard  
979-478-6893

- City of Pleak  
281-239-8504
- City of Richmond  
281-232-6871
- City of Rosenberg  
832-595-3700  
[www.ci.rosenberg.tx.us](http://www.ci.rosenberg.tx.us)
- City of Simonton  
281-496-0066
- City of Stafford  
281-261-3950
- City of Sugar Land  
281-275-2853  
[www.sugarlandresponds.com](http://www.sugarlandresponds.com)
- City of Thompsons  
281-343-9929
- City of Weston Lakes  
281-533-0907

## GALVESTON

- County Emergency Management  
888-384-2000  
[www.gcoem.org/](http://www.gcoem.org/)
- City of Bayou Vista  
409-935-0449
- City of Clear Lake Shores  
281-334-1034  
281-334-2799
- City of Dickinson  
281-337-4700
- City of Friendswood  
281-996-3335

- City of Galveston  
409-765-3710  
[www.cityofgalveston.org](http://www.cityofgalveston.org)
- City of Hitchcock  
409-986-5559  
[www.hitchcockpd.com](http://www.hitchcockpd.com)
- City of Jamaica Beach  
409-737-1142  
[www.ci.jamaicabeach.tx.us](http://www.ci.jamaicabeach.tx.us)
- City of Kemah  
281-334-5414
- City of La Marque  
409-938-9269  
[www.cityoflamarque.org](http://www.cityoflamarque.org)
- City of League City  
281-554-1000  
[www.leaguecity.com](http://www.leaguecity.com)
- City of Santa Fe  
409-925-3092
- City of Texas City  
409-643-5840
- City of Tiki Island  
409-935-1427

## GRIMES

- County Emergency Management  
936-873-4404

## HARRIS

- County Emergency Management  
713-881-3100  
[www.readyharris.org](http://www.readyharris.org)

- City of Baytown  
281-420-6556  
[www.oembaytown.org](http://www.oembaytown.org)
- City of Deer Park  
281-478-7298  
[www.deerparktx.gov/Index.aspx?NID=94](http://www.deerparktx.gov/Index.aspx?NID=94)
- City of El Lago  
281-326-5900
- City of Galena Park  
713-672-2556
- City of Houston  
713-884-4500  
[www.houstontx.gov/emergency](http://www.houstontx.gov/emergency)
- City of Jacinto City  
713-674-8424
- City of Humble  
281-446-4928
- City of Jersey Village  
713-466-2100
- City of La Porte  
281-470-0010  
[www.lpoem.org](http://www.lpoem.org)
- City of Katy  
281-574-8633  
281-391-2300  
[www.cityofkaty.com](http://www.cityofkaty.com)
- City of Morgan's Point  
281-471-2171
- City of Nassau Bay  
281-336-6298
- City of Pasadena  
713-475-5588
- City of Seabrook  
281-291-5700
- City of Shoreacres  
281-471-2244





**IF YOU EVACUATED THE AREA, WAIT FOR AN ALL CLEAR FROM THE CITY OR COUNTY BEFORE ATTEMPTING TO RETURN TO YOUR HOME. BE PREPARED TO SHOW PROOF OF RESIDENCE BY HAVING A COPY OF YOUR LATEST UTILITY BILL.**

## Debris Cleanup

- Cities and counties will publish a schedule for debris pick-up and removal. Debris cannot be removed from private property.
- Construction materials, vegetative debris, household hazardous waste and household appliances will need to be placed into separate piles and moved to the curbside for pick-up.



## General Cleanup

- Be cautious of structural damage and downed power lines. Do not attempt to move structural supports or large pieces of debris.
- DO NOT run power generators indoors. Inhalation of carbon monoxide from the exhaust can cause death. Ensure exhaust is well ventilated.
- DO NOT use open flames indoors.
- Restrict your driving to emergency use only. Road conditions may not be safe until road debris is cleared.

## Water

- Listen for instructions regarding public water supply. Use only bottled, boiled or treated water until you know that your water supply is safe.
- You can use household chlorine bleach to treat water for drinking or cleaning. Add 1/8 teaspoon of bleach per gallon of clear water or 1/4 teaspoon of bleach per gallon if water is cloudy. Allow water to stand for 30 minutes before using.

## Interior Cleanup

- Disinfect and dry interior buildings and items inside. This will prevent growth of some bacteria, viruses, mold, and mildew that can cause illness.
- Clean walls, floors, and counter tops with soap and water. Disinfect them with a solution of 1 cup of bleach to 5 gallons of water.
- Wash all clothes and linens in hot water. Air dry and spray all unwashable items with disinfectant. Steam clean carpets. Throw away all items touched by water that cannot be disinfected.

## Utility Cleanup

- Check for gas leaks. If you smell or hear gas leaking, leave immediately. DO NOT use the phone or turn on lights in your home. Call the gas company from a neighbor's phone.
- Report any visible damage of power lines to the electric company. Turn off power at main breaker if any electrical equipment or circuits have been exposed to water.
- DO NOT connect generators to your home's electrical circuits. If a generator is on line when electrical service is restored, it can become a major fire hazard. Also, line workers working to restore power will be endangered if a generator is hooked up to the home's circuits.
- It is likely that an electric company other than your own will reconnect the lines to your home; however, they cannot turn the service back on. Only your electric company can actually turn the power back on to your house.



## Sewage Cleanup

- If you suspect water or sewage lines are damaged, do not use your plumbing (toilets, sinks, etc.). Contact the water company or a plumber for repairs.
- A chemical portable commode can be created by the following:
  - Use 5 gallon buckets with tight lids, lined with heavy duty plastic garbage bags.
  - Add kitty litter to the bucket as a disinfectant and deodorizer. Keep lids on firmly.
  - Keep buckets in a cool, dark place. Clean and disinfect buckets immediately.
- Your toilet can also be used by flushing until the bowl has no water. Then, line with heavy duty trash bags and disinfect with chlorine bleach after each use. Remove waste to an outside location.
- If significant sewer outages have occurred, instructions for disposal of human wastes will be announced.
- DO NOT dispose of human waste through your regular trash!



# Hurricane Hunters

When a hurricane threatens the United States, or islands around the Caribbean Sea, the 53<sup>rd</sup> Weather Reconnaissance Squadron, known as the Hurricane Hunters of the Air Force Reserve, begin flying into the storm. These brave men and women fly 14 hour missions, slicing through the eyewall of the hurricane, buffeted by howling winds, blinding rain, hail, and violent updrafts and downdrafts, to collect data critical to hurricane forecasting.



The Hurricane Hunters are based out of Keesler Air Force Base in Biloxi, Mississippi and fly in an aircraft called the WC-130J, which is the newest generation of the C-130 Hercules flown by the U.S. Military. These planes are capable of operating in very rough conditions, including hurricanes. Safety is their primary concern. Although there is always a risk associated with aviation, the hurricane hunters pride themselves on the fact that they have flown over 100,000 hours without a mishap.

Crew onboard the aircraft deploy special instruments called GPS (Global Positioning System) drop wind sondes in the eye of the storm. These instruments fall to the ocean surface and provide a detailed look at the structure of the storm by measuring the pressure, humidity, temperature, and wind speed and direction. The data collected is relayed to specialists at the National Hurricane Center in real time, and is then ingested into computer models to help forecasters make accurate predictions on the storms track and intensity.



NOAA also has a series of aircraft that fly both research and operational missions into hurricanes, including the Lockheed WP-3D Orion, Gulfstream IV-SP, and several smaller propeller aircraft. These planes are equipped with more advanced instruments that include onboard doppler radar.

The U.S. Air Force has been flying missions into Hurricanes since WWII. NOAA pilots have flown into hurricanes since 1975. Information gathered from the Hurricane Hunters helps to improve forecasts by as much as 30% and directly contributes to the safety of Americans living along the vulnerable Atlantic and Gulf coasts.

State of the Art Weather and Traffic

**FOX RAD**  
**STORMSEEKER 3D**

Mike

Dr. Jim

Lindsey

J.D.

**TRAFFIC**  
**MAX 360**

Michelle

Fox26Houston

@MyFoxHouston

WWW.MYFOXHOUSTON.COM

**YOUR GULF COAST**  
**WEATHER AUTHORITY**





We're here for your community before  
and after the storm.







# Reliant Hurricane Preparation

We often don't think about the potential effects of a weather event until it's too late. It's never too early to prepare, so take the time to protect your family, home and business at [reliantstormcenter.com](http://reliantstormcenter.com).

## REPORT AN OUTAGE

Electricity delivered to your home or business comes from a power plant before it disperses throughout your neighborhood. While Reliant might sell the electricity to your home or business, a separate utility provider actually owns and maintains the wires and poles that deliver your electricity.

If you experience a power outage, call Centerpoint at **1.800.332.7143**.

## RELIANT COMFORT CENTERS

Reliant Comfort Centers provide services during storm recovery efforts. Conditions permitting, our centers will provide heated meals, water, ice, snacks and phone charging.

### Acres Homes Multi-Service Center

6719 W. Montgomery  
Houston, TX 77091  
832.393.4145

### Denver Harbor Multi-Service Center

6402 Market Street  
Houston, TX 77020  
713.670.2100

### Northeast Multi-Service Center

9720 Spaulding  
Houston, TX 77016  
713.491.5500

### Southwest Multi-Service Center

6400 High Star  
Houston, TX 77074  
713.778.6520

### Sunnyside Multi-Service Center

9314 Cullen  
Houston, TX 77051  
Contact: Cheryl Sheppard  
832.395.0069

Visit the Reliant Storm Center for hurricane preparedness tips at [reliantstormcenter.com](http://reliantstormcenter.com).

Reliant is a registered service mark of Reliant Energy Retail Holdings, LLC.  
Reliant Energy Retail Services, LLC (PUCT Certificate #10007).  
© 2015 Reliant Energy Retail Holdings, LLC. All rights reserved. 22857

**reliant.**  
an NRG company